#### **UNIT TERMINAL OBJECTIVE**

5-8 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for the patient with a toxic exposure.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 5-8.1 Describe the incidence, morbidity and mortality of toxic emergencies. (C-1)
- 5-8.2 Identify the risk factors most predisposing to toxic emergencies. (C-1)
- 5-8.3 Discuss the anatomy and physiology of the organs and structures related to toxic emergencies. (C-1)
- 5-8.4 Describe the routes of entry of toxic substances into the body. (C-1)
- 5-8.5 Discuss the role of the Poison Control Center in the United States. (C-1)
- 5-8.6 List the toxic substances that are specific to your region. (C-1)
- 5-8.7 Discuss the pathophysiology of the entry of toxic substances into the body. (C-1)
- 5-8.8 Discuss the assessment findings associated with various toxidromes. (C-1)
- 5-8.9 Identify the need for rapid intervention and transport of the patient with a toxic substance emergency. (C-1)
- 5-8.10 Discuss the management of toxic substances. (C-1)
- 5-8.11 Define poisoning by ingestion. (C-1)
- 5-8.12 List the most common poisonings by ingestion. (C-1)
- 5-8.13 Describe the pathophysiology of poisoning by ingestion. (C-1)
- 5-8.14 Recognize the signs and symptoms related to the most common poisonings by ingestion. (C-1)
- 5-8.15 Correlate the abnormal findings in assessment with the clinical significance in the patient with the most common poisonings by ingestion. (C-1)
- 5-8.16 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by ingestion. (C-3)
- 5-8.17 Discuss the factors affecting the decision to induce vomiting in a patient with ingested poison. (C-1)
- 5-8.18 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by ingestion. (C-3)
- 5-8.19 Define poisoning by inhalation. (C-1)
- 5-8.20 List the most common poisonings by inhalation. (C-1)
- 5-8.21 Describe the pathophysiology of poisoning by inhalation. (C-1)
- 5-8.22 Recognize the signs and symptoms related to the most common poisonings by inhalation. (C-1)
- 5-8.23 Correlate the abnormal findings in assessment with the clinical significance in patients with the most common poisonings by inhalation. (C-1)
- 5-8.24 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by inhalation. (C-3)
- 5-8.25 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by inhalation. (C-3)
- 5-8.26 Define poisoning by injection. (C-1)
- 5-8.27 List the most common poisonings by injection. (C-1)
- 5-8.28 Describe the pathophysiology of poisoning by injection. (C-1)
- 5-8.29 Recognize the signs and symptoms related to the most common poisonings by injection. (C-1)
- 5-8.30 Correlate the abnormal findings in assessment with the clinical significance in the patient with the most common poisonings by injection. (C-3)
- 5-8.31 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by injection. (C-3)
- 5-8.32 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by injection. (C-3)

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- 5-8.33 Define poisoning by surface absorption. (C-1)
- 5-8.34 List the most common poisonings by surface absorption. (C-1)
- 5-8.35 Describe the pathophysiology of poisoning by surface absorption. (C-1)
- 5-8.36 Recognize the signs and symptoms related to the most common poisonings by surface absorption. (C-1)
- 5-8.37 Correlate the abnormal findings in assessment with the clinical significance in patients with the most common poisonings by surface absorption. (C-3)
- 5-8.38 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by surface absorption. (C-3)
- 5-8.39 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients with the most common poisonings by surface absorption. (C-3)
- 5-8.40 Define poisoning by overdose. (C-1)
- 5-8.41 List the most common poisonings by overdose. (C-1)
- 5-8.42 Describe the pathophysiology of poisoning by overdose. (C-1)
- 5-8.43 Recognize the signs and symptoms related to the most common poisonings by overdose. (C-1)
- 5-8.44 Correlate the abnormal findings in assessment with the clinical significance in patients with the most common poisonings by overdose. (C-3)
- 5-8.45 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by overdose. (C-3)
- 5-8.46 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients with the most common poisonings by overdose. (C-3)
- 5-8.47 Define drug abuse. (C-1)
- 5-8.48 Discuss the incidence of drug abuse in the United States. (C-1)
- 5-8.49 Define the following terms: (C-1)
  - a. Substance or drug abuse
  - b. Substance or drug dependence
  - c. Tolerance
  - d. Withdrawal
  - e. Addiction
- 5-8.50 List the most commonly abused drugs (both by chemical name and street names). (C-1)
- 5-8.51 Describe the pathophysiology of commonly used drugs. (C-1)
- 5-8.52 Recognize the signs and symptoms related to the most commonly abused drugs. (C-1)
- 5-8.53 Correlate the abnormal findings in assessment with the clinical significance in patients using the most commonly abused drugs. (C-3)
- 5-8.54 Differentiate among the various treatments and pharmacological interventions in the management of the most commonly abused drugs. (C-3)
- 5-8.55 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients using the most commonly abused drugs. (C-3)
- 5-8.56 List the clinical uses, street names, pharmacology, assessment finding and management for patient who have taken the following drugs or been exposed to the following substances: (C-1)
  - a. Cocaine
  - b. Marijuana and cannabis compounds
  - c. Amphetamines and amphetamine-like drugs
  - d. Barbiturates
  - e. Sedative-hypnotics
  - f. Cvanide
  - g. Narcotics/ opiates
  - h. Cardiac medications
  - i. Caustics

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- j. Common household substances
- k. Drugs abused for sexual purposes/ sexual gratification
- I. Carbon monoxide
- m. Alcohols
- n. Hydrocarbons
- o. Psychiatric medications
- p. Newer anti-depressants and serotonin syndromes
- q. Lithium
- r. MAO inhibitors
- s. Non-prescription pain medications
  - (1) Nonsteroidal anitinflammatory agents
  - (2) Salicylates
  - (3) Acetaminophen
- t. Theophylline
- u. Metals
- Plants and mushrooms
- 5-8.57 Discuss common causative agents, pharmacology, assessment findings and management for a patient with food poisoning. (C-1)
- 5-8.58 Discuss common offending organisms, pharmacology, assessment findings and management for a patient with a bite or sting. (C-1)
- 5-8.59 Integrate pathophysiological principles of the patient with a toxic substance exposure. (C-1)
- 5-8.60 Differentiate between toxic substance emergencies based on assessment findings. (C-3)
- 5-8.61 Correlate abnormal findings in the assessment with the clinical significance in the patient exposed to a toxic substance. (C-3)
- 5-8.62 Develop a patient management plan based on field impression in the patient exposed to a toxic substance. (C-3)

## **AFFECTIVE OBJECTIVES**

None identified for this unit.

### **PSYCHOMOTOR OBJECTIVES**

None identified for this unit.

#### **DECLARATIVE**

- I. General toxicology, assessment and management
  - Types of toxicological emergencies
    - 1. Unintentional poisoning
      - a. Dosage errors
      - b. Idiosyncratic reactions
      - c. Childhood poisoning
      - d. Environmental exposure
      - e. Occupational exposures
      - f. Neglect and Abuse
    - 2. Drug/ alcohol abuse
    - 3. Intentional poisoning/ overdose
      - a. Chemical warfare
      - b. Assault/ homicide
      - c. Suicide attempts
  - B. Use of poison control centers
  - C. Routes of absorption
    - 1. Ingestion
    - 2. Inhalation
    - Injection
    - 4. Absorption
  - D. Poisoning by ingestion
    - Examples
    - 2. Anatomy and physiology review
      - a. Absorption
      - b. Distribution
    - 3. Assessment findings
    - 4. General management considerations
  - E. Poisoning by inhalation
    - Examples
    - 2. Anatomy and physiology review
      - a. Absorption
      - b. Distribution
    - 3. Assessment findings
    - 4. General management considerations
  - F. Poisoning by injection
    - Examples
      - a. IV drug abuse
      - b. Venomous bites and stings
    - 2. Anatomy and physiology review
      - a. Absorption
      - b. Distribution
    - 3. Assessment findings
    - 4. General management considerations
  - G. Poisoning by absorption
    - 1. Examples
    - 2. Anatomy and physiology review
      - a. Absorption
      - b. Distribution

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- 3. Assessment findings
- 4. General management considerations
- H. Drugs abuse
  - Epidemiology
    - a. Incidence
    - b. Morbidity/ mortality
    - c. Risk factors
    - d. Prevention
  - 2. Psychological issues
  - 3. Psycho-social issues
  - 4. Pathophysiology of long term drug abuse
    - a. End organ damage
      - (1) Brain
      - (2) Liver
      - (3) Heart
    - b. Malnutrition
  - 5. Basic concepts
    - a. Habituation/ dependence/ addiction
      - (1) Physical
      - (2) Psychological
    - b. Tolerance
    - c. Antagonist
    - d. Potentiating
    - e. Synergism
    - f. Withdrawal syndromes
  - 6. Assessment finding
- I. Alcoholism
  - 1. Epidemiology
    - a. Incidence
    - b. Morbidity/ mortality
    - c. Risk factors
    - d. Prevention
  - 2. Psychological issues
  - 3. Psycho-social issues
  - 4. Pathophysiology of long term alcohol abuse
    - a. End organ damage
      - (1) Brain
      - (2) Liver
      - (3) Heart
      - (4) Bone
      - (5) Pancreas
    - b. Malnutrition
    - c. Withdrawal syndrome
  - 5. Assessment findings
- J. Toxic syndromes
  - 1. Definition/ advantages
    - a. Grouping of toxiologically similar agents
    - b. Useful for remembering the assessment and management of toxicological emergencies
    - c. Does not consider how or why the toxin has been introduced to the body

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- d. Be sure to include the general management based or route of entry in addition to specific treatments
- 2. Cholinergics
  - a. Common causative agents pesticides (organophosphates, carbamates) and nerve agents (sarin, Soman)
  - b. Assessment findings
    - (1) Headache
    - (2) Dizziness
    - (3) Weakness
    - (4) Nausea
    - (5) SLUDGE (salivation, lacrimation, urination, defecation, GI Upset, Emesis)
    - Bardycardia, wheezing, bronchoconstriction, myosis, coma, convulsions
    - (7) Diaphoresis, seizures
  - c. Management
    - (1) Decontamination
    - (2) Airway and ventilation
      - (a) Aggressive airway management
    - (3) Circulation
    - (4) Pharmacological
      - (a) Atropine
      - (b) Pralidoxime chloride (2-PAM)
      - (c) Diazepam
      - (d) Activated charcoal
    - (5) Non-pharmacological
    - (6) Transport considerations
      - (a) Appropriate mode
      - (b) Appropriate facility
    - (7) Psychological/ communication strategies
- 3. Anticholinergic
  - a. Common causative agents
  - b. Assessment findings
  - c. Management
    - (1) Airway and ventilation
    - (2) Circulation
    - (3) Pharmacological
    - (4) Non-pharmacological
    - (5) Transport considerations
      - (a) Appropriate mode
      - (b) Appropriate facility
    - (6) Psychological/communication strategies
- 4. Hallucinogens
  - a. Common causative agents lysergic acid diethylamide (LSD), phenyclicidine (PCP), peyote, mushrooms, jimson weed, mescaline
  - b. Assessment findings
    - (1) Chest pain
  - c. Management
    - (1) Airway and ventilation
    - (2) Circulation

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- (3) Pharmacological
- (4) Non-pharmacological
- (5) Transport considerations
  - (a) Appropriate mode
  - (b) Appropriate facility
- (6) Psychological/ communication strategies
- 5. Narcotics/ opiates
  - a. Common causative agents heroin, morphine, codeine, meperidine, propoxyphene, fentanyl
  - b. Assessment findings
    - (1) Euphoria
    - (2) Hypotension
    - (3) Respiratory depression/ arrest
    - (4) Nausea
    - (5) Pinpoint pupils
    - (6) Seizures
    - (7) Coma
  - c. Management
    - (1) Airway and ventilation
    - (2) Circulation
    - (3) Pharmacological
      - (a) Naloxone- opiate specific antidotal therapy
    - (4) Non-pharmacological
    - (5) Transport considerations
      - (a) Appropriate mode
      - (b) Appropriate facility
    - (6) Psychological/ communication strategies
- 6. Sympathomimetics
  - a. Common causative agents
  - b. Assessment findings
  - c. Management
    - (1) Airway and ventilation
    - (2) Circulation
    - (3) Pharmacological
    - (4) Non-pharmacological
    - (5) Transport considerations
      - (a) Appropriate mode
        - (b) Appropriate facility
    - (6) Psychological/ communication strategies
- II. Specific toxicology, assessment and management
  - A. Cocaine
    - 1. Clinical uses
    - 2. Common causative agents
    - 3. Common street names
    - 4. Pharmacodynamics
    - 5. Pharmacokinetics
    - 6. Assessment findings
    - 7. Management
      - a. Airway and ventilation

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- b. Circulation
- c. Pharmacological
- d. Non-pharmacological
- e. Transport considerations
  - (1) Appropriate mode
  - (2) Appropriate facility
- Psychological/ communication strategies
- B. Marijuana and cannabis compounds
  - Clinical uses
  - 2. Common causative agents
  - Common street names
  - 4. Pharmacodynamics
  - 5. Pharmacokinetics
  - 6. Assessment findings
  - 7. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- C. Amphetamines and amphetamine-like drugs
  - 1. Clinical uses
  - 2. Common causative agents
  - Common street names
  - 4. Pharmacodynamics
  - 5. Pharmacokinetics
  - 6. Assessment findings
  - 7. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/communication strategies
- D. Barbiturates
  - 1. Clinical uses
  - 2. Common causative agents
  - 3. Common street names
  - 4. Pharmacodynamics
  - 5. Pharmacokinetics
  - 6. Assessment findings
  - 7. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological

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- d. Non-pharmacological
- e. Transport considerations
  - (1) Appropriate mode
  - (2) Appropriate facility
- Psychological/ communication strategies
- E. Sedative-hypnotics
  - 1. Clinical use
  - Common causative agents benzodiazepines (diazepam, chlordiazepoxide, midazolam)
  - 3. Common street names
  - Pharmacodynamics
  - Pharmacokinetics
  - 6. Assessment findings
    - a. Respiratory depression/ respiratory arrest
    - b. Hypotension
  - 7. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
      - (1) Antidote
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- F. Cyanide
  - 1. Sources
  - 2. Common causative agents
    - a. Used in industry (electroplating, ore extraction, fumigation of structures)
    - b. Product of combustion of nylon or polyurethane
    - c. Ingestion of seeds (apricot, cherry, pears)
    - d. Nitroprusside administration
  - 3. Pharmacodynamics
  - 4. Pharmacokinetics
  - 5. Assessment findings
    - a. History of cyanide exposure
    - b. Early findings (anxiety, dyspnea, confusion, hypertension, agitation)
    - c. Late findings (hypotension, acidosis, seizures, pulmonary edema, dvsrhvthmias, coma)
  - 6. Management
    - a. Personal protective equipment
      - (1) Remove patient from the source of poison
    - b. Airway and ventilation
    - c. Circulation
      - (1) Monitoring for hypotension as a result of therapy
    - d. Pharmacological
      - (1) Antidotes
      - (2) Cyanide antidote kit
    - e. Non-pharmacological
    - f. Transport considerations

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- (1) Appropriate mode
- (2) Appropriate facility
- g. Psychological/ communication strategies
- G. Narcotics/ opiates
  - 1. Clinical uses
  - 2. Common causative agents heroin, morphine, codeine, meperidine, propoxyphene, fentanyl
  - 3. Phamacodynamics
  - Pharmcokinetics
  - 5. Assessment findings
    - a. Euphoria
    - b. Hypotension
    - c. Respiratory depression/ arrest
    - d. Nausea
    - e. Pinpoint pupils
    - f. Seizures
    - g. Coma
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
      - (1) Naloxone opiate specific antidotal therapy
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- H. Cardiac medications
  - 1. Clinical use
  - 2. Common causative agents antidysrythmics, beta blockers, calcium channel blockers, glycosides
  - 3. Pharmacodynamics
  - 4. Pharmacokinetics
  - 5. Assessment findings
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- I. Caustics
  - Source
  - 2. Common causative agents acids and alkali
  - 3. Pharmacodynamics
  - 4. Pharmacokinetics
  - Assessment findings
  - 6. Management

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- a. Airway and ventilation
- b. Circulation
- c. Pharmacological
- d. Non-pharmacological
- e. Transport considerations
  - (1) Appropriate mode
  - (2) Appropriate facility
- Psychological/ communication strategies
- J. Common household poisonings
  - 1. Sources
  - 2. Common causative agents bleach, cleaning agents
  - 3. Pharmacodynamics
  - 4. Pharmacokinetics
  - 5. Assessment findings
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- K. Drugs abused for sexual purposes/ sexual gratification
  - 1. Sources
  - 2. Common causative agents
  - 3. Pharmacodynamics
  - 4. Pharmacokinetics
  - 5. Assessment findings
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- L. Carbon monoxide
  - 1. Source
  - 2. Common causative agents
  - 3. Pharmacodynamics
  - 4. Pharmacokinetics
  - 5. Assessment findings
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
      - (1) Hyperbaric treatment

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- e. Transport considerations
  - (1) Appropriate mode
  - (2) Appropriate facility
- f. Psychological/ communication strategies
- M. Alcohols
  - 1. Clinical use/ sources
  - 2. Common causative agents ethylene glycol, methanol, isopropyl alcohol, ethanol
  - 3. Pharmacodynamics
  - Pharmacokinetics
  - 5. Assessment findings
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
      - (1) Antidote
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- N. Hydrocarbons
  - 1. Source
  - 2. Common causative agents gasoline
  - 3. Pharmacodynamics
    - a. Aspiration pneumonia
    - b. CNS depression
    - Acute gastritis
  - 4. Pharmacokinetics
  - 5. Assessment findings
  - 6. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
      - Psychological/ communication strategies
- O. Psychiatric medications
  - 1. Tricyclic antidepressants
    - a. Clinical use
    - b. Common causative agents amitriptyline amoxapine, clomipramine, doxepin, imipramine, nortptyline
    - c. Phamacodynamics
    - d. Pharmacokinetics
    - e. Assessment findings
      - (1) Early findings (dry mouth, confusion, hallucinations)
      - (2) Late findings (delirium, respiratory depression, hypotension, hyperthermia, seizures, coma)
      - (3) Cardiotoxicity dysrhythmias

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- f. Management
  - (1) Airway and ventilation
  - (2) Circulation
  - (3) Pharmacological
    - (a) Antidote
    - (b) Sodium bicarbonate may reverse the cardiotoxic effects
  - (4) Non-pharmacological
  - (5) Transport considerations
    - (a) Appropriate mode
    - (b) Appropriate facility
  - (6) Psychological/ communication strategies
- 2. Newer anti-depressants and serotonin syndromes
  - a. Clinical uses
  - b. Common causative agents
  - c. Common street names
  - d. Pharmacodynamics
  - e. Pharmacokinetics
  - f. Assessment findings
  - g. Management
    - (1) Airway and ventilation
    - (2) Circulation
    - (3) Pharmacological
    - (4) Non-pharmacological
    - (5) Transport considerations
      - (a) Appropriate mode
      - (b) Appropriate facility
    - (6) Psychological/ communication strategies
- 3. Lithium
  - a. Clinical uses
  - b. Common causative agents
  - c. Common street names
  - d. Pharmacodynamics
  - e. Pharmacokinetics
  - f. Assessment findings
  - g. Management
    - (1) Airway and ventilation
    - (2) Circulation
    - (3) Pharmacological
    - (4) Non-pharmacological
    - (5) Transport considerations
      - (a) Appropriate mode
      - (b) Appropriate facility
    - (6) Psychological/ communication strategies
- 4. MAO inhibiters
  - a. Clinical use
  - b. Common causative agents
  - c. Pharmacodynamics
  - d. Pharmacokinetics
  - e. Assessment findings
  - f. Management

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- (1) Airway and ventilation
- (2) Circulation
- (3) Pharmacological
- (4) Non-pharmacological
- (5) Transport considerations
  - (a) Appropriate mode
  - (b) Appropriate facility
- (6) Psychological/ communication strategies
- 5. Other
- P. Non-prescription pain medications
  - Nonsteroidal anti-inflammatory agents
    - a. Clinical uses
    - b. Common causative agents
    - c. Common street names
    - d. Pharmacodynamics
    - e. Pharmacokinetics
    - f. Assessment findings
    - g. Management
      - (1) Airway and ventilation
      - (2) Circulation
      - (3) Pharmacological
      - (4) Non-pharmacological
      - (5) Transport considerations
        - (a) Appropriate mode
        - (b) Appropriate facility
      - (6) Psychological/ communication strategies
  - 2. Salicylates
    - a. Clinical uses
    - b. Common causative agents
    - c. Common street names
    - d. Pharmacodynamics
    - e. Pharmacokinetics
    - f. Assessment findings
    - g. Management
      - (1) Airway and ventilation
      - (2) Circulation
      - (3) Pharmacological
      - (4) Non-pharmacological
      - (5) Transport considerations
        - (a) Appropriate mode
        - (b) Appropriate facility
      - (6) Psychological/ communication strategies
  - 3. Acetaminophine
    - a. Clinical use
    - b. Common causative agents
    - c. Pharmacodynamics
    - d. Pharmacokinetics
    - e. Assessment findings
    - f. Management
      - (1) Airway and ventilation

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- Circulation (2)
- (3) Pharmacological
- (4) Non-pharmacological
- Transport considerations (5)
  - Appropriate mode (a)
- (b) Appropriate facility Psychological/ communication strategies (6)
- Theophylline

Q.

- Clinical use
- Common causative agents
- 2. 3. 4. **Pharmacodynamics**
- **Pharmacokinetics**
- 5. Assessment findings
- Management
  - Airway and ventilation a.
  - b. Circulation
  - c. Pharmacological
  - d. Non-pharmacological
  - Transport considerations e.
    - (1)Appropriate mode
    - (2)Appropriate facility
  - f. Psychological/ communication strategies
- R. Metals
  - 1. Clinical use
  - 2. Common causative agents - iron, lead, mercury
  - 3. Pharmacodynamics
  - 4. **Pharmacokinetics**
  - 5. Assessment findings
  - 6. Management
    - Airway and ventilation a.
    - Circulation b.
    - Pharmacological C.
      - (1) Antidote
    - d. Non-pharmacological
    - Transport considerations e.
      - Appropriate mode (1)
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- S. Plants and mushrooms
  - 1. Clinical use
  - 2. Common causative agents
  - 3. Common street names
  - 4. **Pharmacodynamics**
  - **Pharmacokinetics** 5.
  - 6. Assessment findings
  - 7. Management
    - Airway and ventilation a.
    - Circulation b.
    - Pharmacological C.
    - d. Non-pharmacological

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- e. Transport considerations
  - (1) Appropriate mode
  - (2) Appropriate facility
- f. Psychological/ communication strategies
- T. Food poisoning
  - Common causative agents
  - 2. Pharmacodynamics
    - a. Type I reaction
    - b. Gastrointestinal allergy
    - c. Bacterial toxins
      - (1) Exotoxins
      - (2) Enterotoxins
    - d. Neurotoxins
      - (1) Paralytic shellfish poisoning
  - 3. Pharmacokinetics
  - 4. Assessment findings
  - 5. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies
- U. Bites and stings
  - Common offending organisms hymenoptera, spider bites, other arthropods, snake bites, marine animal
  - 2. Pharmacodynamics
  - 3. Pharmacokinetics
  - 4. Assessment findings
  - 5. Management
    - a. Airway and ventilation
    - b. Circulation
    - c. Pharmacological
    - d. Non-pharmacological
    - e. Transport considerations
      - (1) Appropriate mode
      - (2) Appropriate facility
    - f. Psychological/ communication strategies